ORDER NO. AD8809263A3

Service Manual

COMPACT disc DIGITAL AUDIO

DIGITAL

Multi Compact Disc Player

SL-P400C

Color

(K) ..... Black Type

Note: Please dispose of the service manual for Model No. SL-P400C. (Order No. AD8805066A3) and replace it with this service manual.

1. **This model is a derivative model of Model No. SL-P400C (M). When you repair this model, please refer to the service manual (Order No. HAD8804115C1) and supplement manual (Order No. AD8809231S1) for the SL-P400C (M).**
2. **This service manual contains some differences to the service manual for the SL-P400C (M).**

Area

Color	Area
(K)	(XL) ... Australia.
(K)	(XA) ... Asia, Latin America, Middle Near East, Africa and Oceania.

CHANGES

■ REPLACEMENT PARTS LIST

Notes:
- Mentioned in this parts list are only those parts different from Model No. SL-P400C for the destination (M) area. Other parts are the same as for Model No. SL-P400C for the destination (M) area.
- Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
- Remote Control Ass'y:
  Supply period for three years from termination of production.

Ref. No.	Change of Part No. SL-P400C (M) ➡ SL-P400C (XA) (XL)		Part Name & Description	Remarks
CABINET AND CHASSIS				
2 (XL)	SGPD701KY0C	**SGPLP400CKXL**	REAR PANEL	Change
2 (XA)	SGPD701KY0C	**SGPD701KY1B**	REAR PANEL	Change
5 (XA)	SJS9234A	**SJS9231A**	COVER, AC INLET	Change
35 (XA) ⚠	SJS9234B	**SJS9231B**	AC INLET	Change
ACCESSORIES				
A1	SQX54717	**SQX54719**	INSTRUCTION MANUAL	Change
A2 (XL) ⚠	SJA172-1	**SJA173**	POWER CORD	Change
A2 (XA) ⚠	SJA172-1	**SJA168-1**	POWER CORD	Change
A6	SHRD107-1Z	**SHRD141-1Z**	6 DISC MAGAZINE	Change
A7 (XA) ⚠	——	**SJP9215**	CHANGE PLUG	Addition
INTEGRATED CIRCUIT				
IC601	HCMD12M	**HCMD10E**	IC, REMOTE RECEIVER	Change
TRANSFORMERS				
T1 (XA) ⚠	SLTD5K075KM	**SLTD5K077KX1**	POWER TRANSFORMER	Change
T1 (XL) ⚠	SLTD5K075KM	**SLTD5K078KG1**	POWER TRANSFORMER	Change
SWITCH				
S2 (XA) ⚠	——	**SSRD3**	VOLTAGE SELECTOR	Addition
FUSES				
F1 (XL) ⚠	——	**XBA2C01TBO**	FUSE, 250 V, T100 mA	Addition
F1 (XA) ⚠	——	**XBA2C02TBO**	FUSE, 250 V, T200 mA	Addition

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

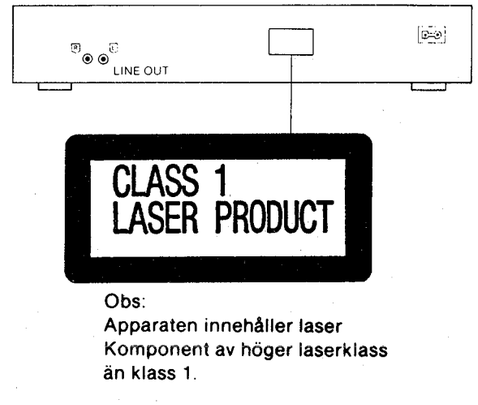
(Continue)

- **Remote control unit part**

Ref. No.	Change of Part No. SL-P400C (M) ➡ SL-P400C (XA) (XL)		Part Name & Description	Remarks
OSCILLATOR				
X1001	CSB455EB1	**CSB420PB1**	OSCILLATOR, 420 kHz	Change
CAPACITORS				
C1001	ECKD1H101KB	**ECKD1H471KB**	CERAMIC, 470 PF, 50 V	Change
C1002	ECKD1H101KB	**ECKD1H121KB**	CERAMIC, 120 PF, 50 V	Change
MECHANISM PARTS				
1	UR64VCS552	**UR64VCS554**	TOP COVER	Change
2	UR64CS802	**UR64CS803A**	BOTTOM COVER	Change
REMOTE CONTROL ASS'Y				
RC1	EUR64788	**EUR64789**	REMOTE CONT. (REFER TO NOTE)	Change

■ PRECAUTION OF LASER DIODE

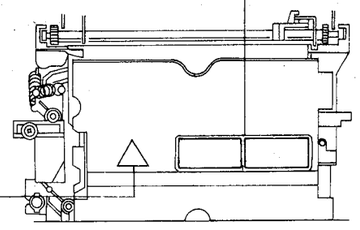
Caution: This product utilizes a laser diode
ADVARSEL: I dette a apparat anvendes laser.



Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.

ADVARSEL-Der vil udstråles osynlig laserbestråling når apparatet åbnes og aflåsningsmekanismen frigøres. UNDGÅ AT BLIVE UDSET FOR LASERBESTRÅLING.

DANGER-Invisible laser radiation when open and Interlock defeated. AVOID DIRECT EXPOSURE TO BEAM.

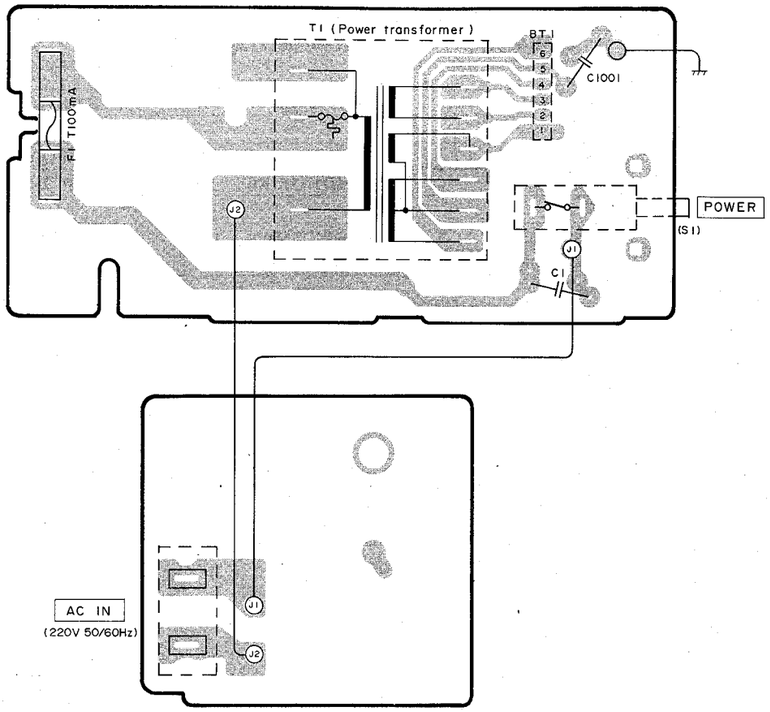


VAROITUS! Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilya

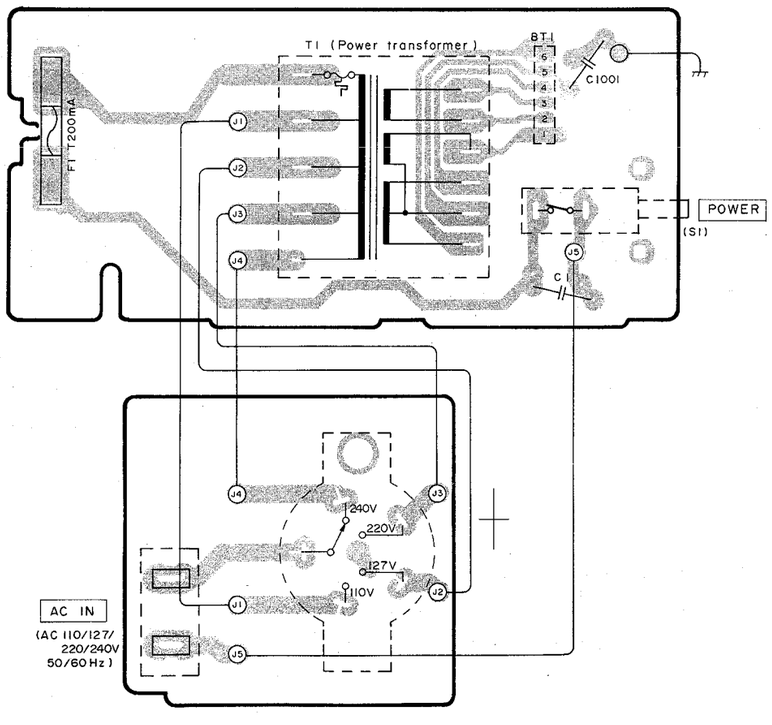
■ PRINTED CIRCUIT BOARDS

• POWER SOURCE P.C.B.

• FOR (XL) area



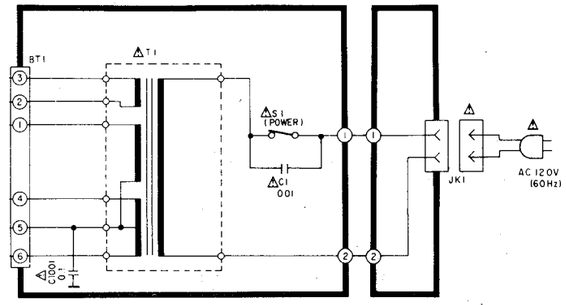
• FOR (XA) area



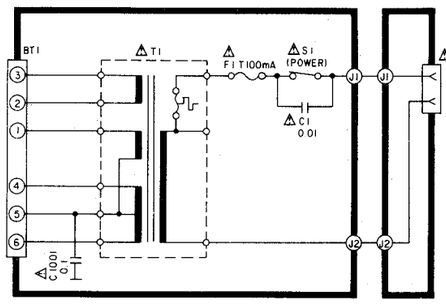
■ SCHEMATIC DIAGRAM

• POWER SUPPLY CIRCUIT

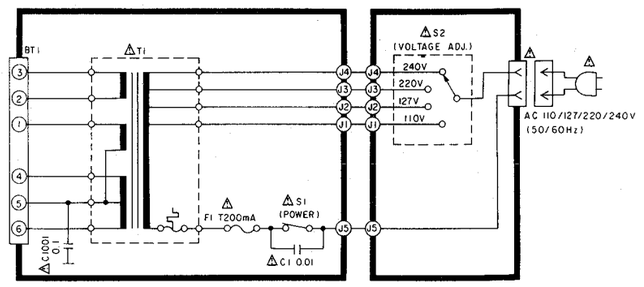
• FOR (M) area



• FOR (XL) area



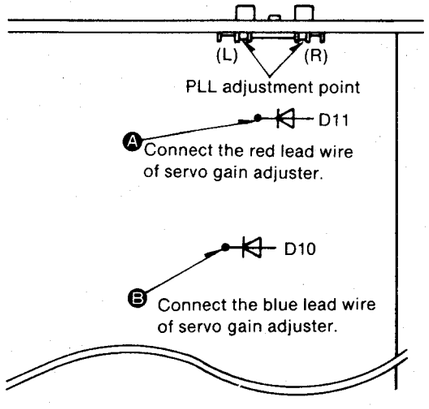
• FOR (XA) area



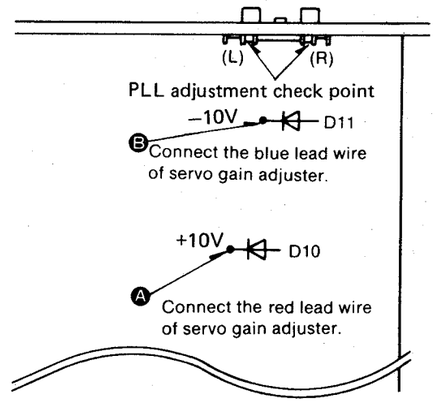
■ MEASUREMENTS AND ADJUSTMENTS (Correction: page 18)

ADJUSTMENT POINTS

• Main P.C.B.



Note: Connect the green lead wire to GND (chassis) of the servo gain adjuster.



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ORDER NO. AD8809231S1
A6

Service Manual

Multi Compact Disc Player

SL-P400C

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Color

(K)...Black Type

Area

Color	Area
(K)	(M).....U.S.A.
(K)	(MC).....Canada.

Modification of the Servo Circuit

Note: The SL-P400C's servo circuit has been modified during its production. Major changes in its ICs and transistors are listed in the following table (next page). The IC401's peripheral circuit on the A P.C.B. has also been partially modified. The Supplementary Service Manual outlines all the circuitry except for their operation/magazine & draw-in detection switch/detection switch junction circuits. (No modification has been made to their operation/magazine & draw-in detection switch/detection switch junction circuits. For a schematic, see page 45 of the original Service Manual.)
Use the original Service Manual (ORDER NO. HAD8804115C1) together with this Supplementary Service Manual.

CHANGES

Notes (1) Reason for Modifications: To simplify the servo circuit while improving its performance.
(2) Modifications Effective: From August, 1988 and onward
(3) Identification of Modified Units:
1): A serial number suffix of **C** or beyond indicates a modified unit.
2): A "CAUTION" label (THE ORIGINAL DESIGN HAS BEEN CHANGED. REFER TO SERVICE MANUAL (SUPPLEMENT).) has been affixed inside the chassis.

Technics

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Victoria Industrial Park
Carolina, Puerto Rico 00630

■ MAJOR CHANGES IN SEMICONDUCTOR DEVICES

Ref. No.	Change of Part No.		Part Name & Description	Remarks
	Original →	New		
IC101	AN8370S	**AN8373S**	SERVO AMP	
IC102	MN6636	**AN8374S**	SERVO PROCESSOR	
IC103	AN6554NS	**AN8377**	BTL DRIVE	
IC104	AN6552S	**LM2940T5M**	REGULATOR	
IC105~106	AN6552S	**Deletion**	———	
IC201	LM2940T5	**Deletion**	———	
IC202	AN6552S	**Deletion**	———	
IC501	AN8371S	**Deletion**	———	
IC401 *	MN15283PER	**MN15283PJB**	SYSTEM CONTROL	
Q101	2SA1547-Q	**2SA1547QSTV2**	A.P.C.	
Q141	2SD1862-P	**Deletion**	———	
Q142	2SB1240-P	**Deletion**	———	
Q161	2SD1862-P	**Deletion**	———	
Q162	2SB1240-P	**Deletion**	———	
Q181	2SD1862-P	**Deletion**	———	
Q182	2SB1240-P	**Deletion**	———	
Q201, 203	2SD1862-P	**Deletion**	———	

* IC401: System-controlling microprocessor on the **A** P.C.B. All other ICs and transistors listed in this table are used on the **B** Servo P.C.B.

* A comprehensive electrical parts list, regarding the servo circuit, appears on pages 25~28 of this Supplementary Service Manual.
(None of the mechanical parts have been affected by these modifications. Refer to the original Service Manual.)

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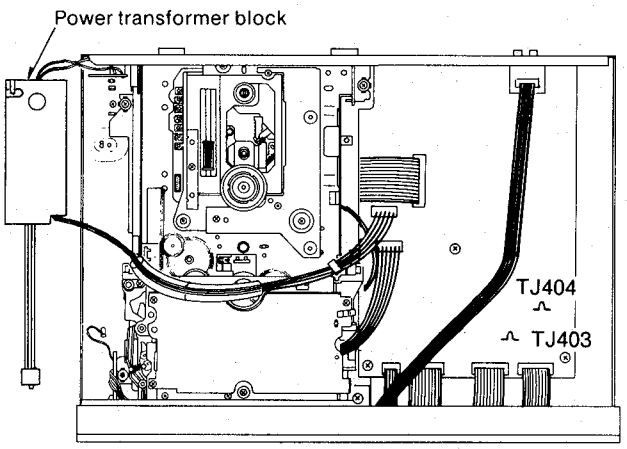
■ MEASUREMENTS AND ADJUSTMENTS

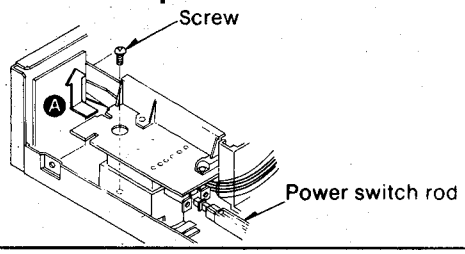
Caution:
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens. Avoid exposure to the laser beam , especially when performing adjustments.

PREPARTION

1. Remove the cabinet (Refer to page 12, Ref. No. 1 in the original Service Manual.)
2. Remove the power transformer block from the chassis (as shown below), leaving the connector (CN1) and the ground wire connected.
3. Remove the loading unit. (Refer to page 15, Ref. No. 12 in the original Service Manual.)
4. Remove the disc magnet. (Refer to page 14, Ref. No. 8 in the original Service Manual.)
5. Place the test disc and the magnet on the turntable.
6. Connect TJ403 to TJ404 with a lead wire.
7. Turn "ON" the power switch of the player.



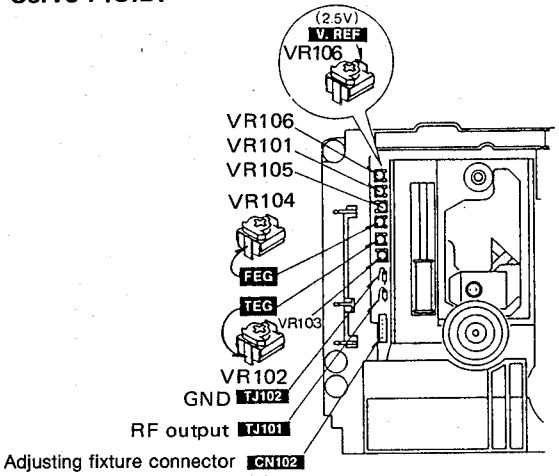
- **How to remove the power transformer block.**

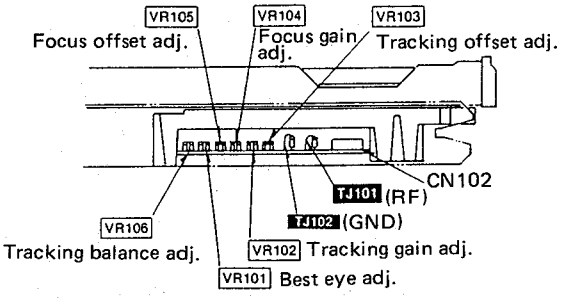


1. Remove the screw.
2. Remove in the direction of the arrow Ⓐ.

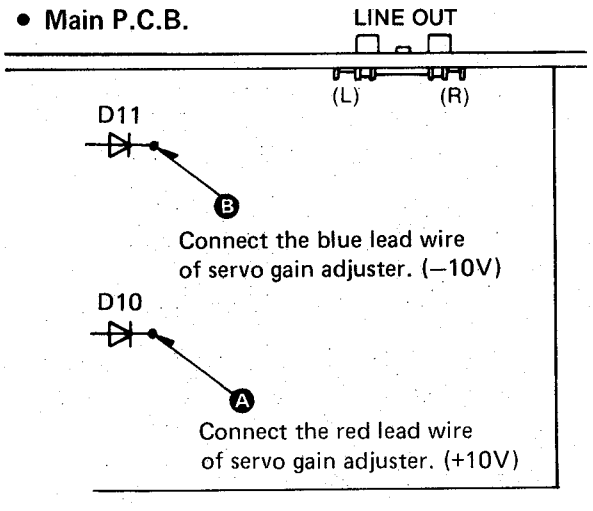
ADJUSTMENT POINTS

- **Servo P.C.B.**

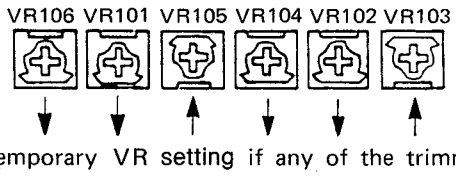




- **Main P.C.B.**



- **Temporary setting of each VR**



Temporary VR setting if any of the trimmer VRs are replaced or require readjustment, temporarily set them to the following positions:

D

Measuring Instruments and Special Tools

* Servo gain adjuster (SZZP1017F)
* Test discs
1. Playability test disc (SZZP1054C or SZZP1014F)
2. Uneven test disc (SZZP1056C)
3. Black band test disc (SZZP1057C)
* Normal disc
* Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT trigger and 1:1 probe).
* Audio frequency (AF) oscilator
* Conversion connector (SZZP1032F)
* Allen wrench (M2.0)
* Allen wrench (M1.27)
* 0.9mm clearance gauge (RZZ0297)

Perform adjustments depend on the part to be replaced according to followings:

(1) Spindle motor ..... Items 1, 3 to 8
(2) Turntable ..... Items 1, 3 to 8
(3) Optical pickup ..... Items 2 to 8

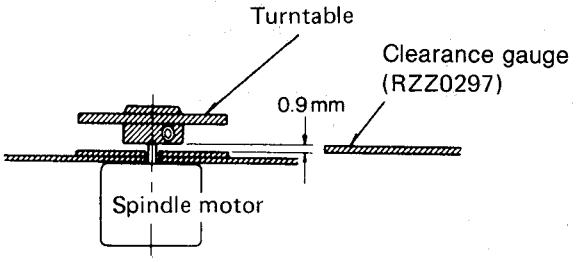
Adjusting Procedure

* If you have replaced the spindle motor or turntable, do the following adjustment:

(1) TURNTABLE HEIGHT ADJUSTMENT

1. Insert the 0.9mm clearance gauge (RZZ0297) between the turntable and the loading base (see the figure at right).
2. Tighten the turntable retention screw with the 1.27mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across VR104's **FEG** (+) and VR106's **V. REF** (−) terminals via a filter.
   (Note: A voltage of 2.5V appears at the V. REF terminal. Take care not to short the player's chassis to the oscilloscope ground.)
   Oscilloscope setting: VOLT . . . . . 50 mV
   SWEEP . . . . . 1 ms.
   Input coupling . . . DC
4. Adjust oscilloscope's DC zero balance.
5. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
6. Measure the voltage amplitude of the signal on the oscilloscope.

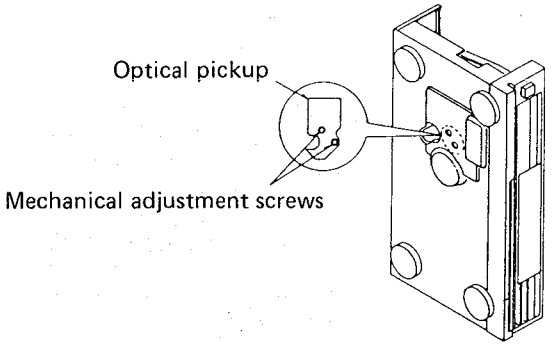
Note 1. If the measured amplitude is within a range of +/− 15mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.
If the amplitude exceeds +15mV, lower turntable.
If the amplitude is below −15mV, elevate the turntable.

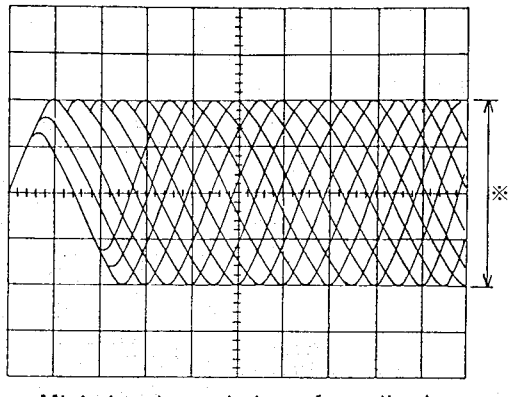


Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set **VR105** at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)

(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μs.
   Input coupling . . . AC
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1056C).
3. Leave the player in Play mode, and place it on its right side as shown at right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench until the RF signal amplitude variation on the oscilloscope is minimized.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint (RZZOL01).



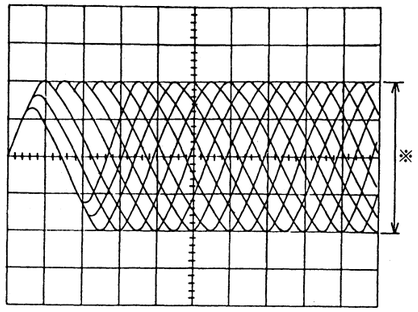


※ Minimize the variation of amplitude.

D

(3) BEST EYE (PD BALANCE) ADJUSTMENT

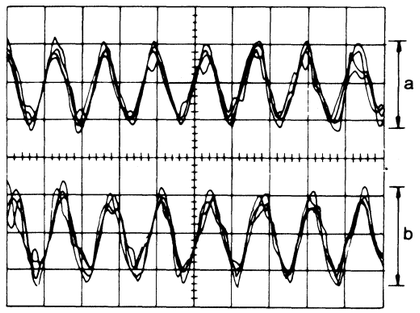
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μs
   Input coupling . . . AC
2. Switch the player power **ON**, and play the 0.5 mm black dot on the test disc (SZZP1014F or SZZP1054C).
3. Adjust **VR101** until the RF signal eye pattern amplitude is maximized.



※ Maximize the amplitude.

(4) FOCUS GAIN ADJUSTMENT

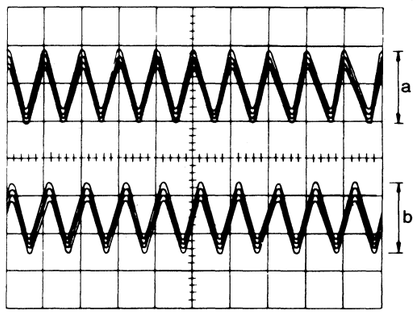
1. Connect the servo gain adjuster to the player (see page 7).
2. Set the servo gain adjuster's gain switch to position **"2"** and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT . . . . . 100 mV (both channels)
   SWEEP . . . . . 0.2 ms.
   Input coupling . . . AC
5. Play the test disc (SZZP1014F or SZZP1054C).
6. Set the servo gain adjuster's gain switch to position "3", and you will see a 825 Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position **"2"**.



※ Adjust **VR104** until a equals b.

(5) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT . . . . . 100 mV (both channels)
   SWEEP . . . . . 0.2 ms.
   Input coupling . . . AC
3. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
4. Set the servo gain adjuster's gain switch to position "1", and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR102** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position **"2"**.

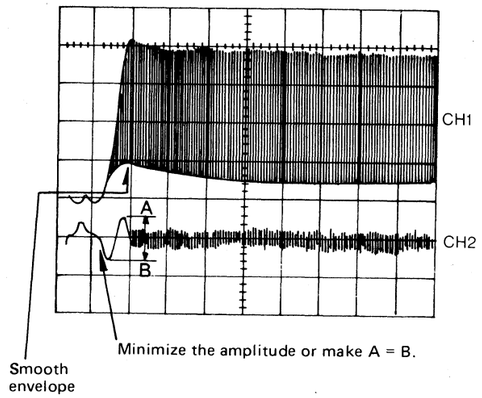


※ Adjust VR102 until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

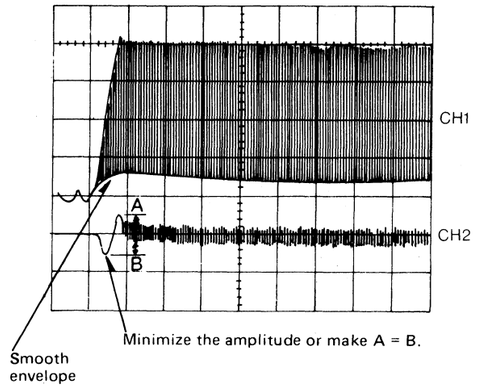
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's **FEG** terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. . . . . .0.2 ms.
   Input coupling. . . AC (both CH. 1 and 2)
   Trigger mode . . . .NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR105** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(7) TRACKING OFFSET ADJUSTMENT

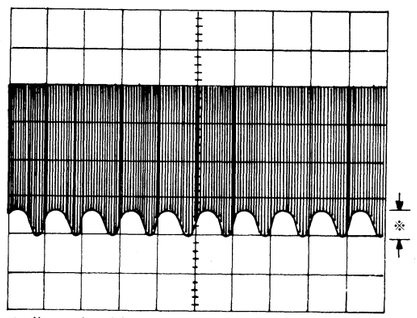
Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B., and its CH. 2 probe (+) to VR102's **TEG** terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. . . . . .0.2 ms.
   Input coupling. . AC (both CH. 1 and 2)
   Trigger mode. . . NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(8) TRACKING BALANCE ADJUSTMENT

1. Make sure that servo gain adjuster's gain switch is set to position **"2"**.
2. Set up the AF oscillator output for **1.1 kHz, 600 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
3. Connect oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   200 mV (CH. 2)
   SWEEP. . . . . .0.1 ms.
   Input coupling. . .AC (both CH. 1 and 2)
   Trigger mode . . .NORM (trigger CH. 2)
4. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
5. Set the servo gain adjuster's gain switch to position **"1"**, and adjust **VR106** until the jitter contained in the signal waveform on CH. 1 is minimized as shown below.
6. Disconnect the servo gain adjuster's leads from the player.



※ Jitter should be minimized.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

*** Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

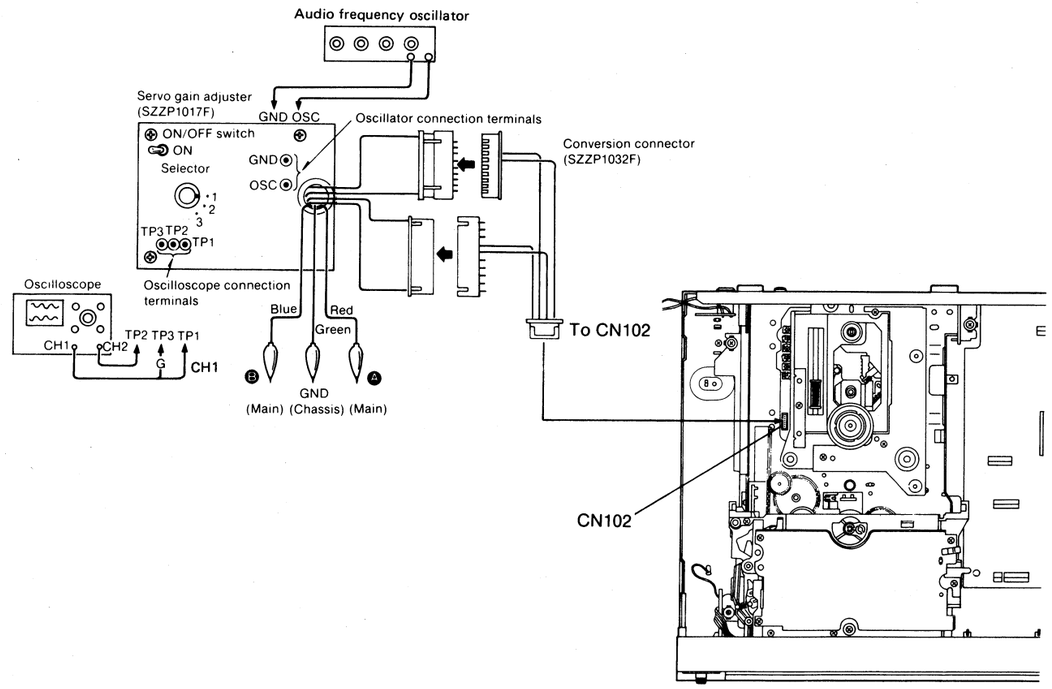
*** Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

*** Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

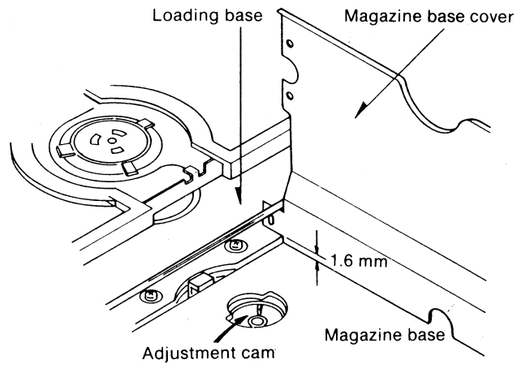
Connection of Servo Gain Adjuster



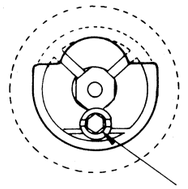
■ LOADING BASE HEIGHT ADJUSTMENT

1. Turn **ON** the power switch of the unit without the disc magazine.
2. Remove the magazine base cover.
   (Refer to "HOW TO REMOVE THE MAGAZINE BASE COVER" on page 14 in the original Service Manual.)
   Note: The magazine base cover can be used as the gauge for loading base height adjustment.
3. Set the gauge as shown in Fig. 1.
4. Adjust the loading base height to 1.6 mm with the adjustment cam by turning it with a small flat screwdriver. (Fig.2)
   - To raise the loading base .....Turn clockwise.
   - To lower the loading base .....Turn counterclockwise.

   Standard height: 1.6 ± 0.2 mm
5. Turn **OFF** the power switch.
6. Turn **ON** the power switch to make sure the loading base height is set to 1.6 mm.

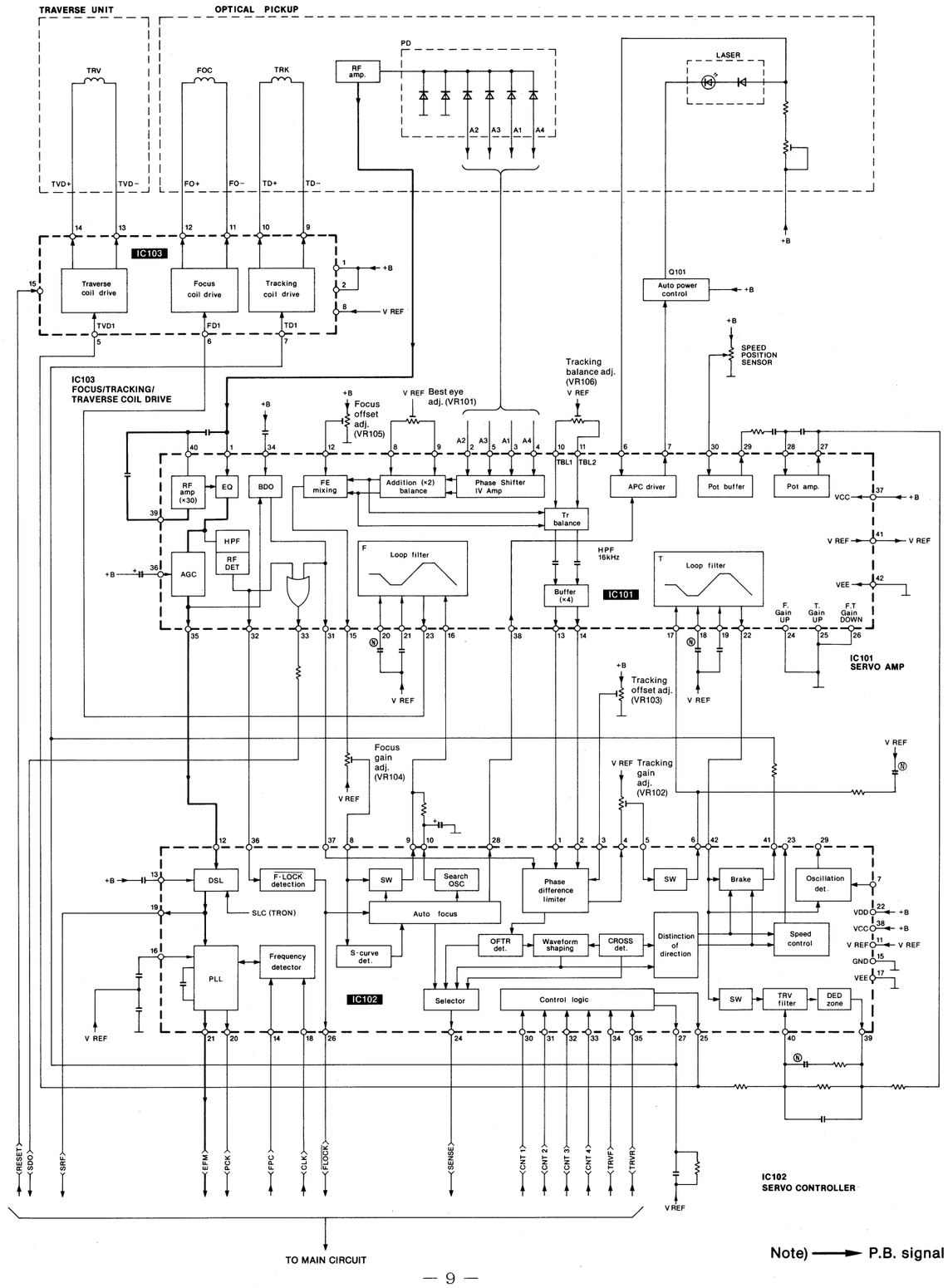


(Fig. 1)



(Fig. 2)

■ BLOCK DIAGRAM OF SERVO CIRCUIT



■ TERMINAL FUNCTION OF ICs

- **IC101 (AN8373S): Servo amp.**

Pin No.	Mark	I/O Division	Function
1	AMP1	I	RF signal input (X30 amp.)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		

Pin No.	Mark	I/O Division	Function
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input (Not used, connected to GND)
25	TGC	I	Tracking gain up signal input (Not used, connected to GND)
26	GD	I	Focus/tracking down signal input (Not used, connected to GND)
27	PTO	O	Position detecting amp. output
28	PTI	I	Position detecting amp. input
29	PBO	O	Position detecting buffer output
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	$\overline{\text{RFDET}}$	O	RF detection signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C. AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply (+5 V input)
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output
41	VREF	O	Reference voltage output
42	GND	I	Ground terminal

• IC102 (AN8374S): Servo processor

Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	I	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor output
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	I	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	I	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK

Pin No.	Mark	I/O Division	Function
22	VDD	I	Power supply (+5 V input)
23	SPCNT	O	Track crossing speed control output output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output (Not used, open)
30	CNT1	I	Control input (FOON: Focus servo ON signal)
31	CNT2	I	Control input (TRON: Tracking servo ON signal)
32	CNT3	I	Control input (KICKF: Kick direction (forward) command)
33	CNT4	I	Control input (KICKR: Kick direction (reverse) command)
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply (+5 V input)
39	TVPO	O	Traverse position detecting resistor/capacitor inputs
40	TVPI	I	
41	BROUT	O	Tracking drive control output
42	BRIN	I	Tracking error signal input

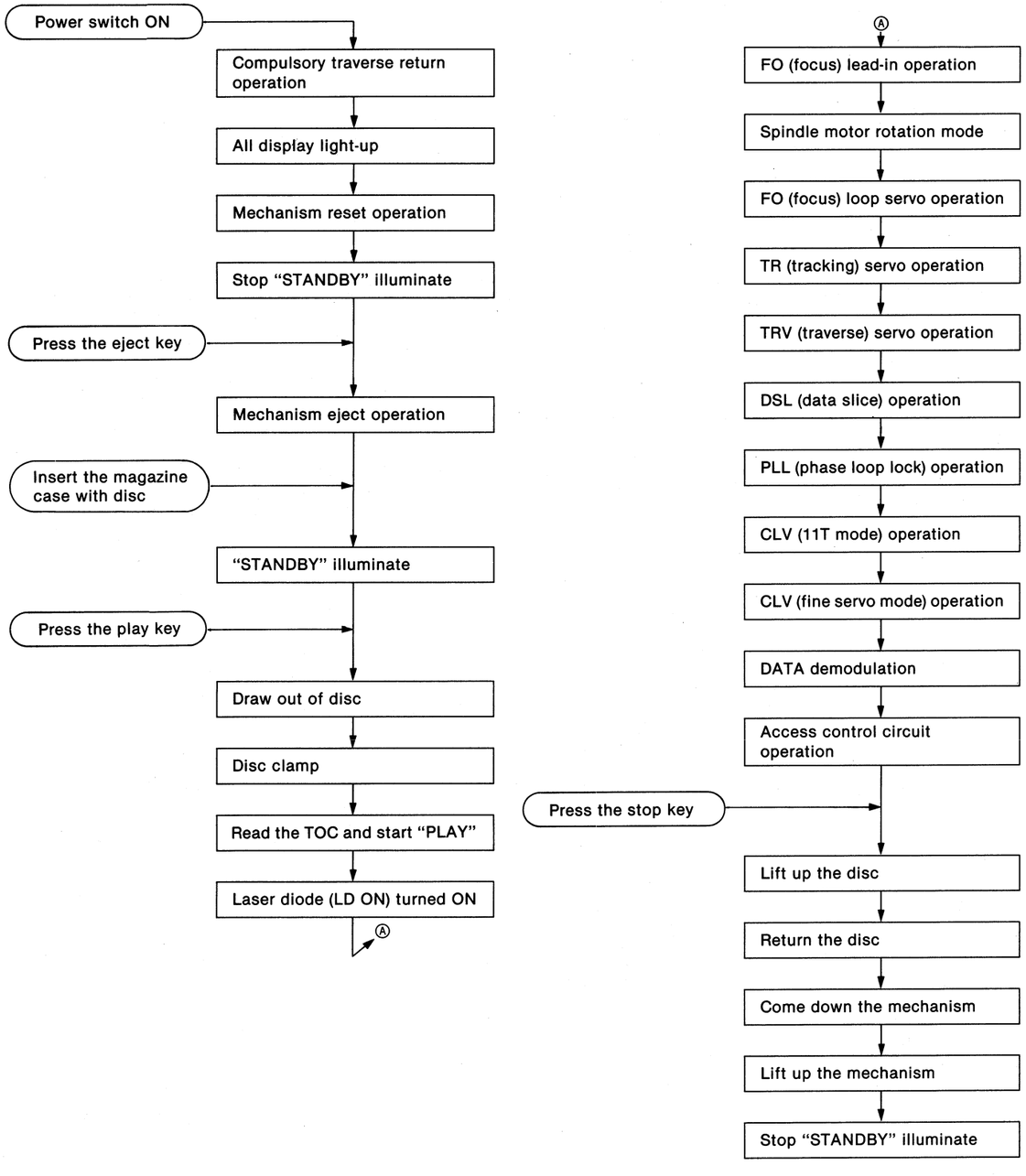
• IC103 (AN8377): BTL drive

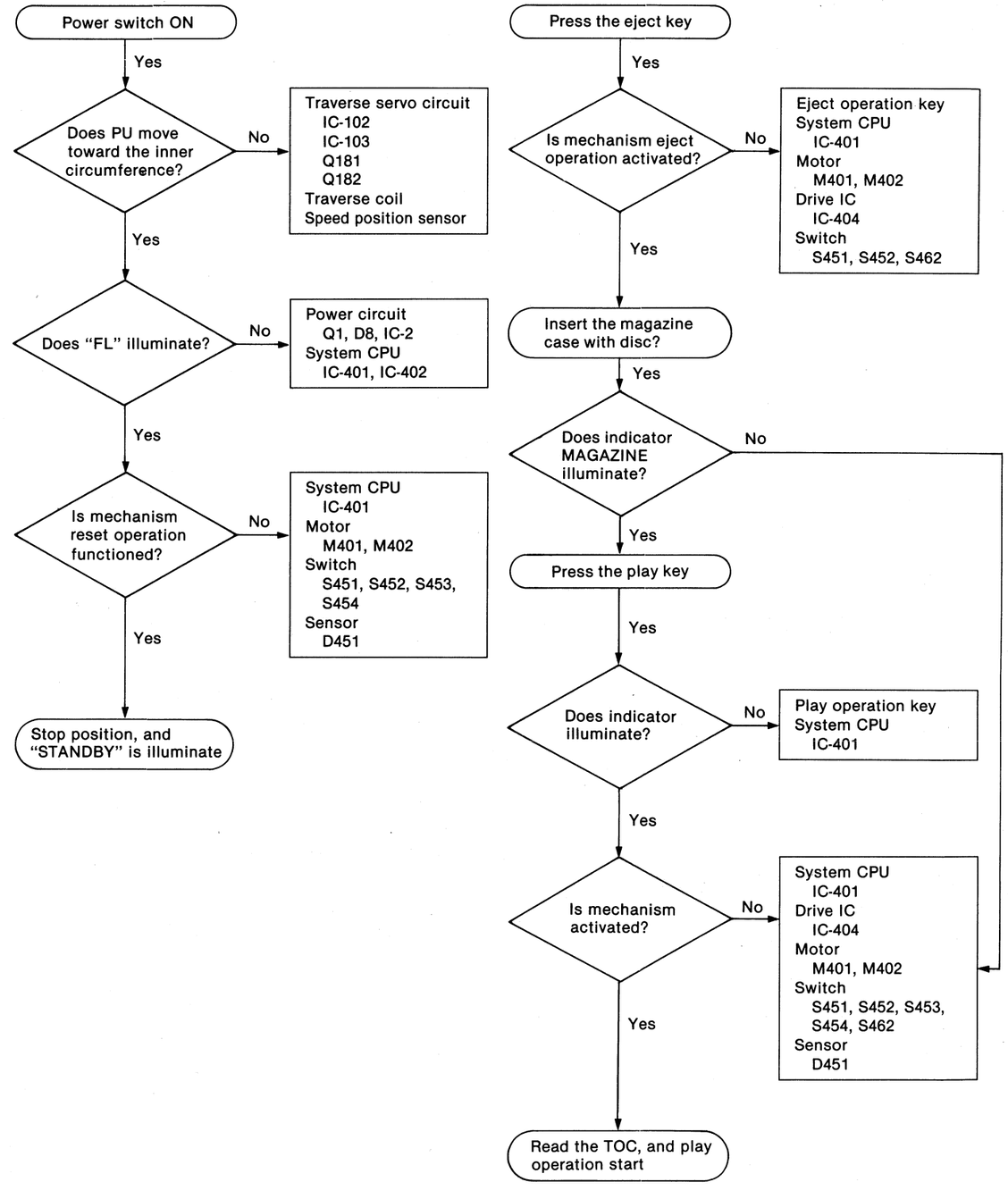
Pin No.	Mark	I/O Division	Function
1	PVCC	I	Driver power supply (+5 V input)
2	VCC	I	Power supply (+5 V input)
3	TB	O	External transistor base driving output
4	VMON	O	Voltage (+5 V) output
5	TVDI	I	Traverse error signal input
6	FDI	I	Focus error signal input
7	TDI	I	Tracking error signal input
8	VREF	I	Reference voltage input

Pin No.	Mark	I/O Division	Function
9	TD–	O	Inverting output of tracking driver
10	TD+	O	Non-inverting output of tracking driver
11	FD–	O	Inverting output of focus driver
12	FD+	O	Non-inverting output of focus driver
13	TVD–	O	Inverting output of traverse driver
14	TVD+	O	Non-inverting output of traverse driver
15	$\overline{\text{RESET}}$	O	Reset signal output
16	PC	I	PC input (connect to GND)

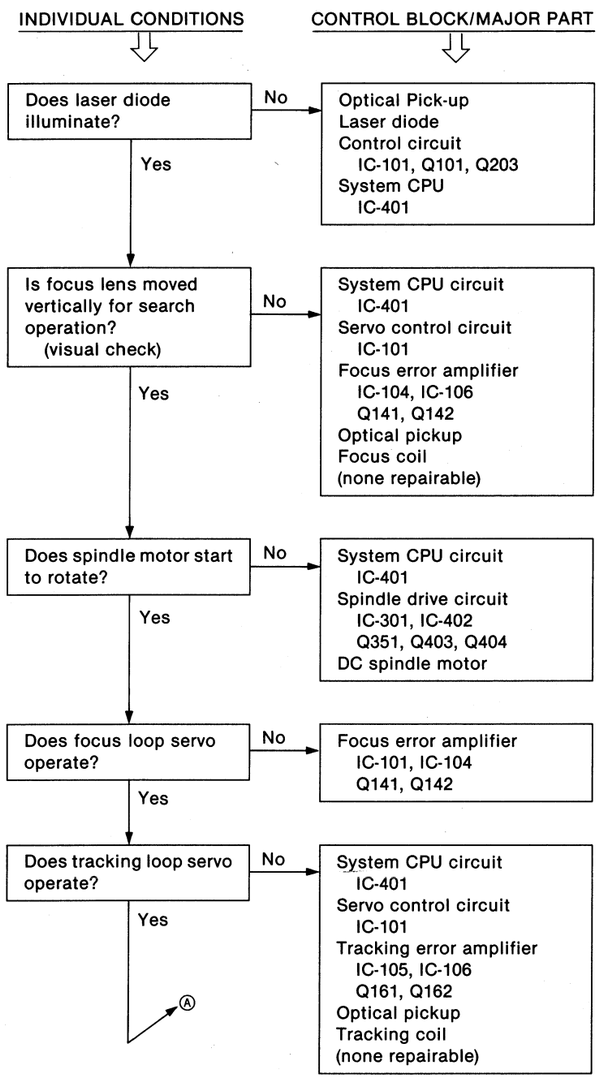
■ TROUBLESHOOTING GUIDE

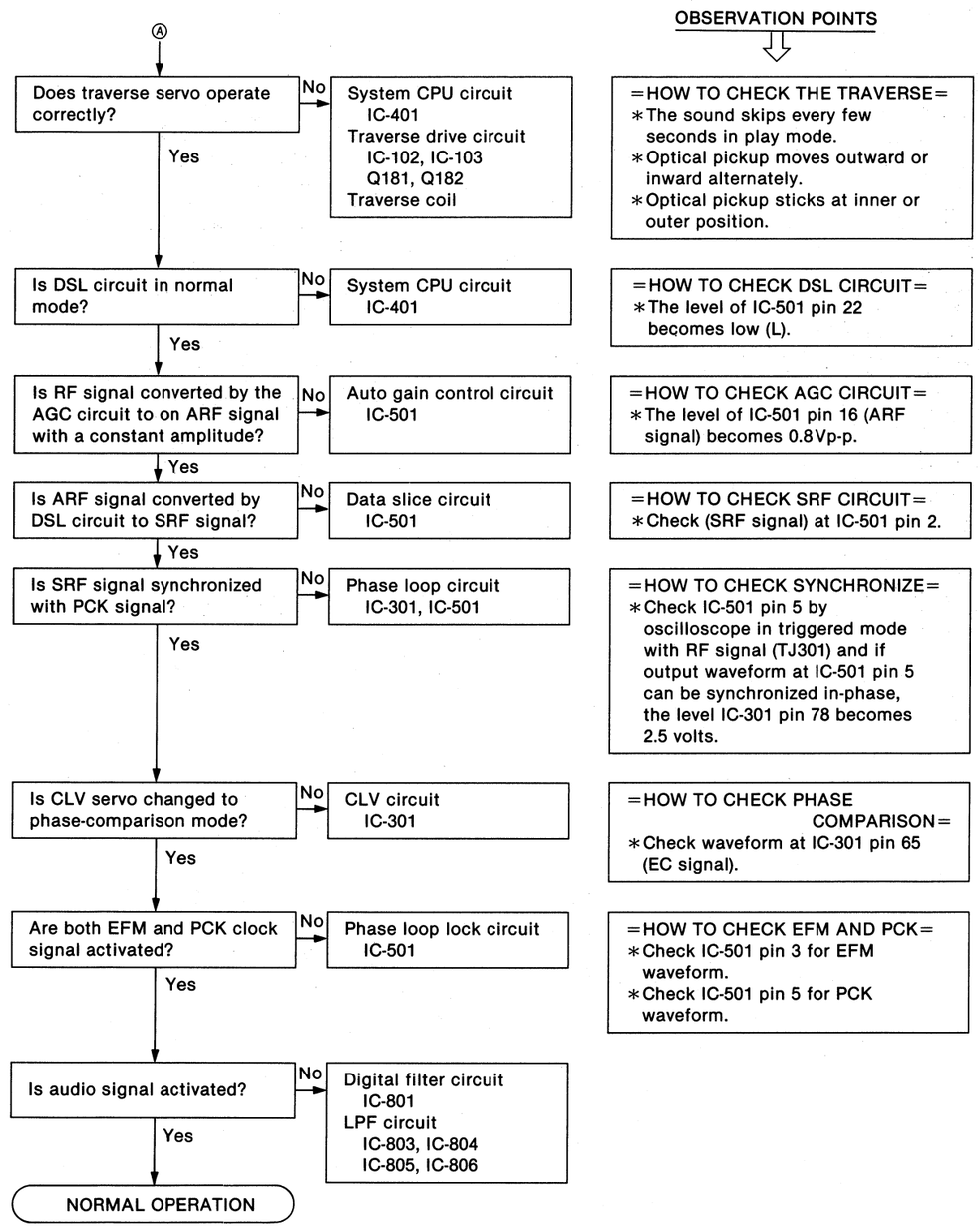
PLAYBACK FLOW CHART





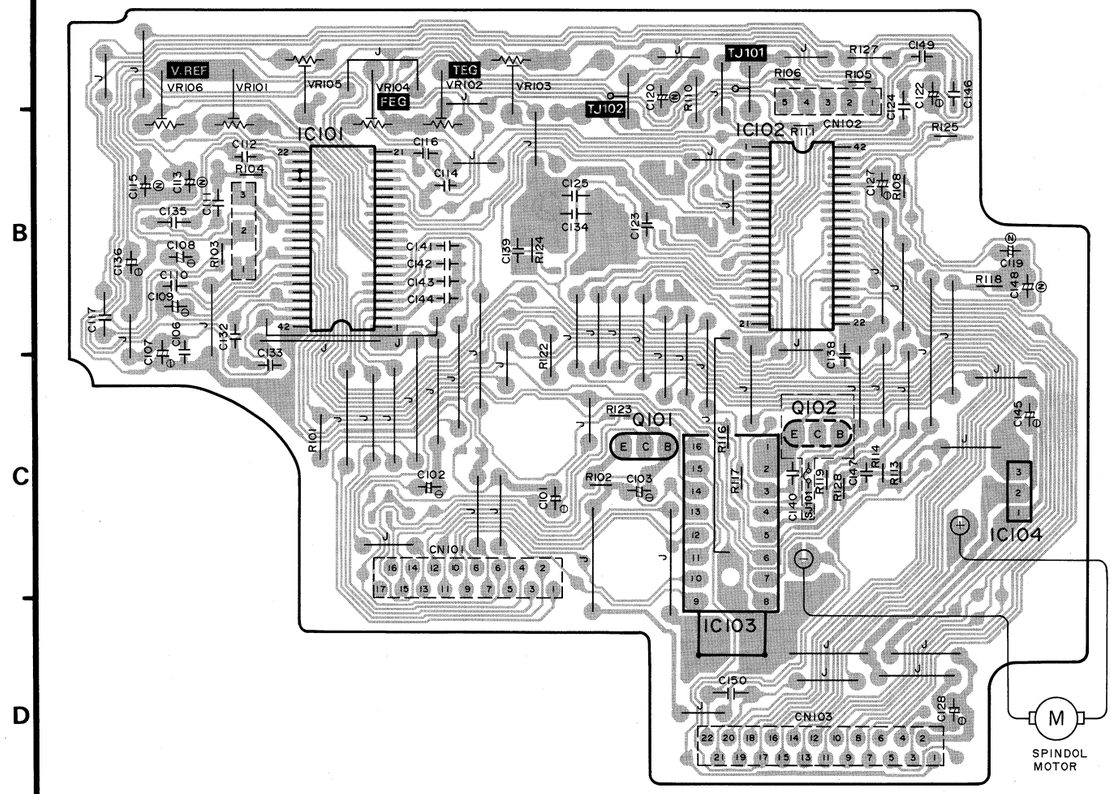
TOC READ OPERATION - PLAY OPERATION




OBSERVATION POINTS
Ⓐ
Does traverse servo operate correctly?
No
System CPU circuit
IC-401
Traverse drive circuit
IC-102, IC-103
Q181, Q182
Traverse coil
=HOW TO CHECK THE TRAVERSE=
*The sound skips every few seconds in play mode.
*Optical pickup moves outward or inward alternately.
*Optical pickup sticks at inner or outer position.
Yes
Is DSL circuit in normal mode?
No
System CPU circuit
IC-401
=HOW TO CHECK DSL CIRCUIT=
*The level of IC-501 pin 22 becomes low (L).
Yes
Is RF signal converted by the AGC circuit to on ARF signal with a constant amplitude?
No
Auto gain control circuit
IC-501
=HOW TO CHECK AGC CIRCUIT=
*The level of IC-501 pin 16 (ARF signal) becomes 0.8Vp-p.
Yes
Is ARF signal converted by DSL circuit to SRF signal?
No
Data slice circuit
IC-501
=HOW TO CHECK SRF CIRCUIT=
*Check (SRF signal) at IC-501 pin 2.
Yes
Is SRF signal synchronized with PCK signal?
No
Phase loop circuit
IC-301, IC-501
=HOW TO CHECK SYNCHRONIZE=
*Check IC-501 pin 5 by oscilloscope in triggered mode with RF signal (TJ301) and if output waveform at IC-501 pin 5 can be synchronized in-phase, the level IC-301 pin 78 becomes 2.5 volts.
Yes
Is CLV servo changed to phase-comparison mode?
No
CLV circuit
IC-301
=HOW TO CHECK PHASE COMPARISON=
*Check waveform at IC-301 pin 65 (EC signal).
Yes
Are both EFM and PCK clock signal activated?
No
Phase loop lock circuit
IC-501
=HOW TO CHECK EFM AND PCK=
*Check IC-501 pin 3 for EFM waveform.
*Check IC-501 pin 5 for PCK waveform.
Yes
Is audio signal activated?
No
Digital filter circuit
IC-801
LPF circuit
IC-803, IC-804
IC-805, IC-806
Yes
NORMAL OPERATION

■ PRINTED CIRCUIT BOARDS

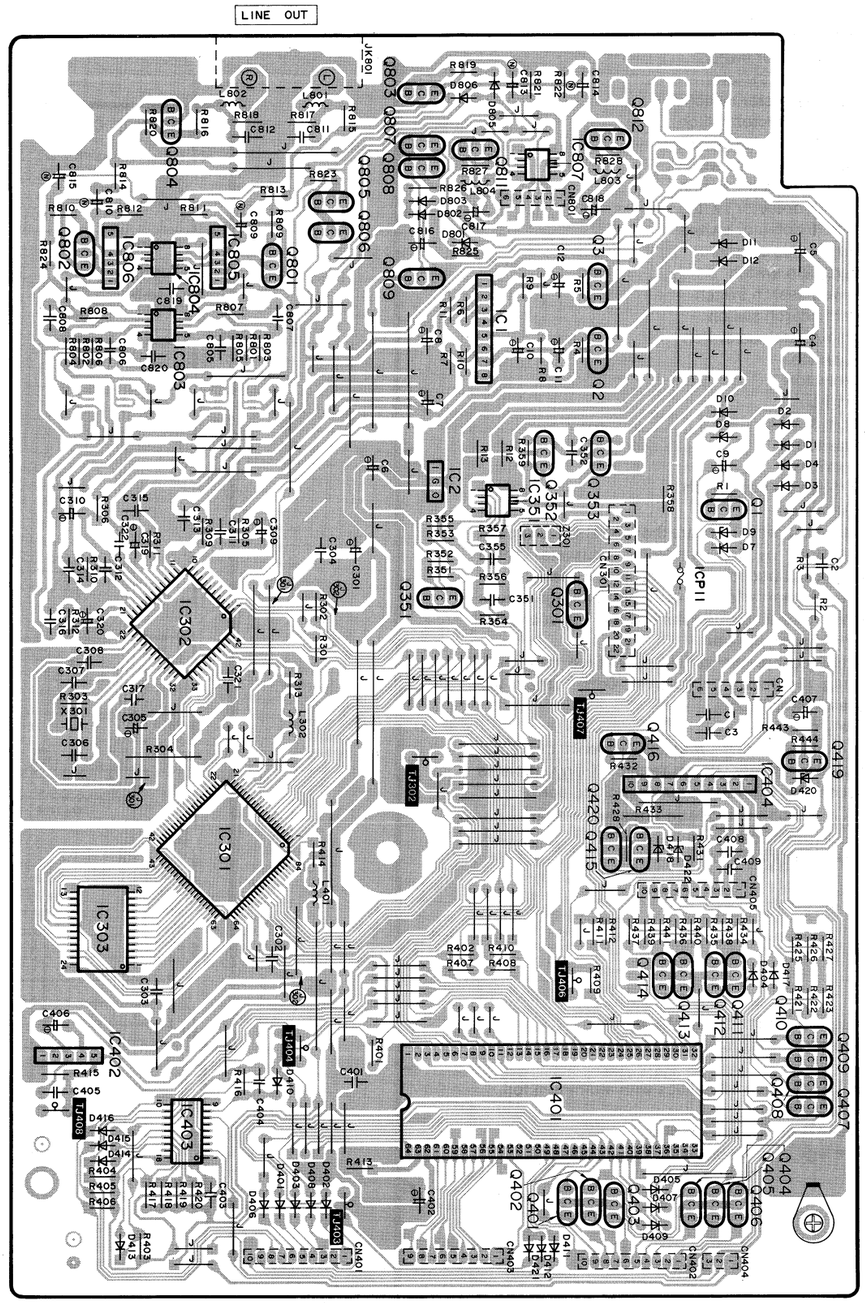
B SERVO P.C.B.



Note: Original circuit uses AN8377 for IC103 while the new circuit uses AN8377N for IC103. (Refer to the table below for other changes.)

IC103 / Modifications	AN8377	AN8377N
IC104	LM2940T5M	Removed
Q102	Removed	2SB1240QR Added
C140	0.01µF	Removed
C145	6V 100µF	Removed
Jumper SJ101	Removed	**Shorted**

A MAIN P.C.B.



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

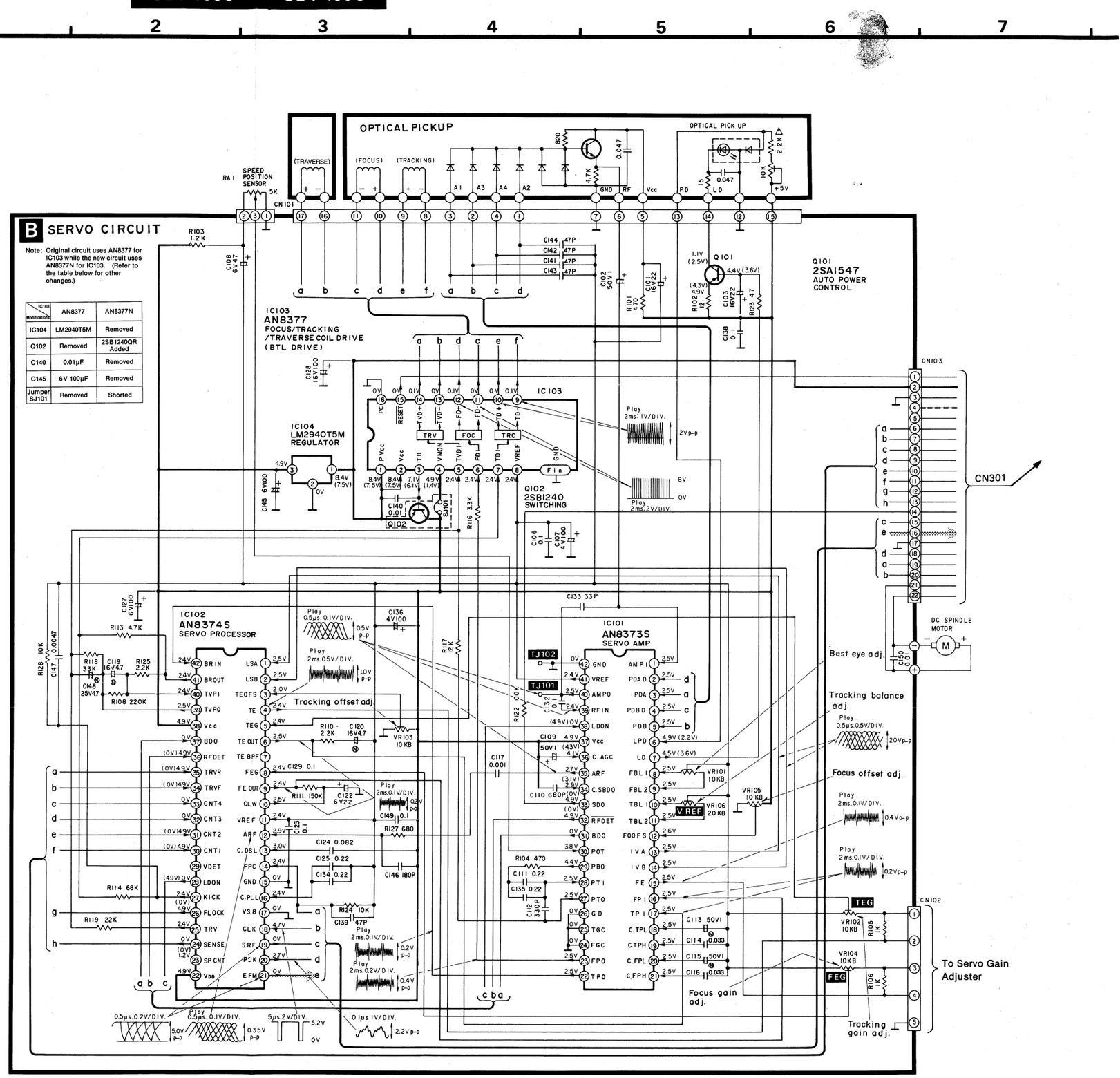
Notes:

1. **S1** : Power switch in **"on"** position
2. **S451** : Eject detector switch
3. **S452** : Loading detector switch
4. **S453** : Draw in detector switch
5. **S454** : Reset detector switch
6. **S462** : Magazine detector switch
7. **S601** : Disc No. 1 detector switch
8. **S602** : Disc No. 2 detector switch
9. **S603** : Disc No. 3 detector switch
10. **S604** : Disc No. 4 detector switch
11. **S605** : Disc No. 5 detector switch
12. **S606** : Disc No. 6 detector switch
13. **S607** : Backward skip switch
14. **S608** : Forward skip switch
15. **S609** : Backward search switch
16. **S610** : Forward search switch
17. **S611** : Program/Continue switch
18. **S612** : Clear switch
19. **S613** : Pause switch
20. **S614** : Play switch
21. **S615** : Random switch
22. **S616** : Stop switch
23. **S617** : Eject switch
24. **S618** : Time-mode select switch.
25. **S619** : Repeat switch
26. The voltage value and waveform are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
    * The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.
27. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
28. —□—/--□--- : Positive voltage lines and negative voltage lines.
    ⋯⋯ : Audio signal lines.

* Caution!

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

* Cover the parts boxes made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.



8 9 10 11 12 13 14 15 16 17 18

A MAIN CIRCUIT

CN301 CN103 CN404 CN401 CN402 CN403 CN405

FC604 FC601 FC602 FC603 BT451

To E OPERATION CIRCUIT

To I DETECTION SWITCH JUNCTION CIRCUIT

IC403 MN1550PEB MICRO COMPUTER (REMOTE CONT.)

IC404 BA6247 MOTOR DRIVE

Direction select · Amp · Drive · Speed designation

Q411 ~ 414 2SA1309 SWITCHING

TJ404

D401~403, 406, 408, 411, 412 1SS254

D404, 405, 407, 409 1SS254

D413~416 1SS254

Q401 ~ 406 UN4212 FL DRIVE

Q407 ~ 410 UN4112 FL DRIVE

Q415, 420 UN4212 SWITCHING

Q416 2SA1309 SWITCHING

IC401 MN15283PJB SYSTEM CONTROL

TJ403 TJ406 TJ408

IC402 M51953BL RESET

Q301 UN4212 SWITCHING

TJ302

IC301 MN6617 DIGITAL SIGNAL PROCESSING

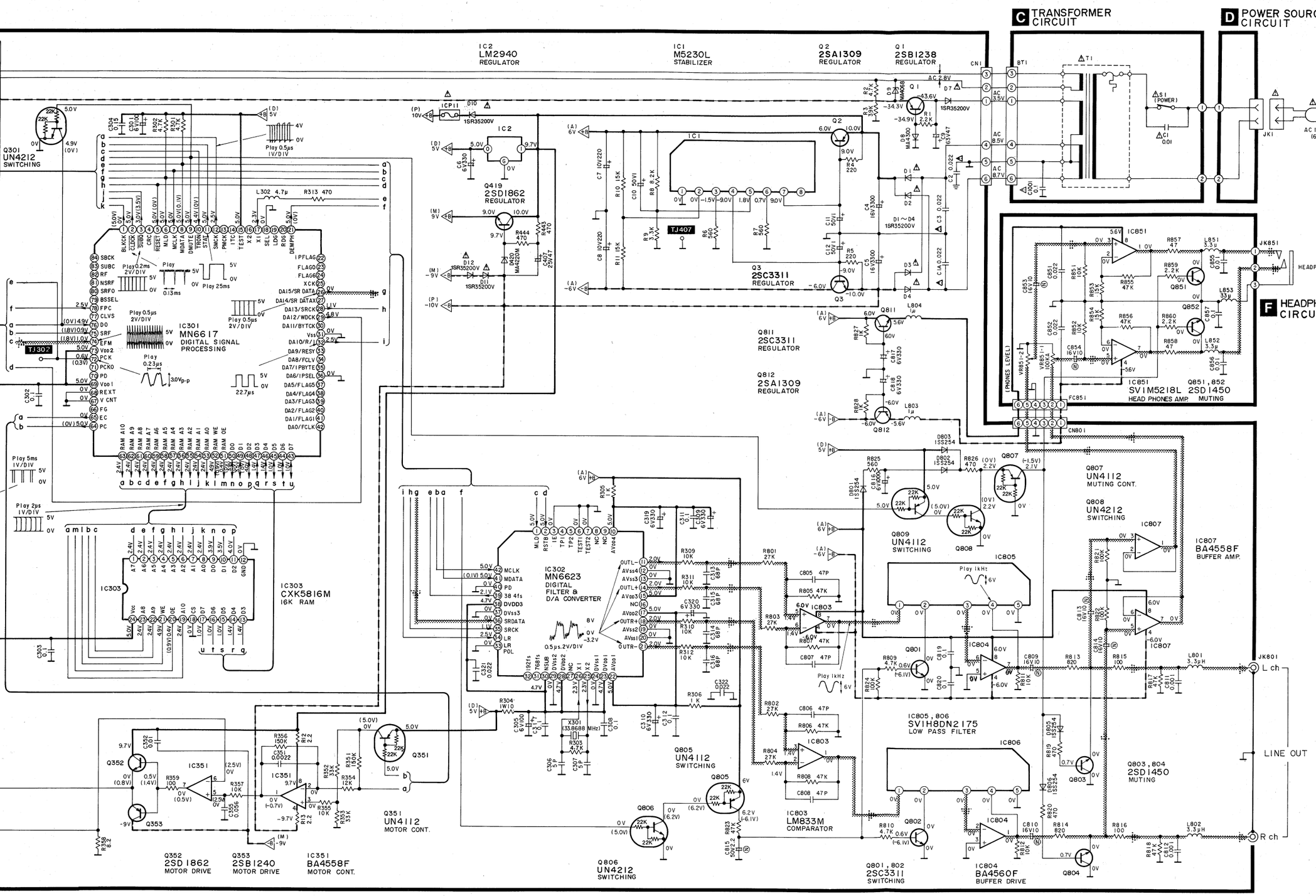
IC303

IC351

Q352 2SD1862 MOTOR DRIVE

Q353 2SB MOTOR

17 18 19 20 21 22 23 24 25 26



■ RESISTORS AND CAPACITORS

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Numbering System For Resistors

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1KΩ)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470Ω)

Numbering System For Capacitors

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001μF)	Tolerance	Unique
ECEA	50	M	330	
Type	Voltage (50V)	Characteristics	Value (33μF)	

● Capacity values are in microfarads (μF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
● Resistance values are in ohms (Ω), unless specified otherwise, 1K = 1,000Ω, 1M = 1,000kΩ

Resistor Type		Wattage		Tolerance
ERD	: Carbon	10 : 1/8W	12 : 1/2W	J : ±5%
ERG	: Metal Oxide	14 : 1/4W	25 : 1/4W	F : ±1%
ERQ	: Fuse Type Metal	1A : 1W	18 : 1/8W	G : ±2%
ERX	: Metal Film	S2 : 1/4W	S1 : 1/2W	J : ±5%
ERD L	: Carbon (chip)	2F : 1/4W	50 : 1/2W	K : ±10%
ERO K	: Metal Film (chip)	2A : 2W	3A : 3W	M : ±20%
ERC	: Solid	6G : 1/10W	8G : 1/8W	
ERF	: Incombustible Box-Shaped			
ERM	: Wire-Wound			
RRJ	: Chip Resistor			
ERJ	: Chip Resistor			

Capacitor Type		Voltage		Tolerance
ECE	: Electrolytic	0J : 6.3V	1A : 10V	K : ±10%
ECCD	: Ceramic	1C : 16V	1E : 25V	M : ±20%
ECKD	: Ceramic Capacitor	1H : 50V	1V : 35V	Z : +80 % −20
ECQM	: Polyester	50 : 50V	05 : 50V	J : ±5%
ECQP	: Polypropylene	2H : 500V	2A : 100V	G : ±2%
ECG	: Ceramic	1 : 100V	1J : 63V	F : ±1%
ECEA N	: Non Polar Electrolytic	KC : 400V AC		C : ±0.25pF
QCU	: Ceramic (Chip Type)	KC : 125V AC (UL)		D : ±0.5pF
ECUX	: Ceramic (Chip Type)			
ECF	: Semiconductor			
EECW	: Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)		
R1	ERDS2TJ222	2.2K 1/4
R2	ERDS2TJ472	4.7K 1/4
R3	ERDS2TJ392	3.9K 1/4
R4	ERDS2TJ221	220 1/4
R5	ERDS2TJ221	220 1/4
R6	ERDS2TJ561	560 1/4
R7	ERDS2TJ561	560 1/4
R8	ERDS2TJ822	8.2K 1/4
R9	ERDS2TJ332	3.3K 1/4
R10	ERDS2TJ153	15K 1/4
R11	ERDS2TJ153	15K 1/4
R12	ERD25FJ2R2	2.2 1/4
R13	ERD25FJ2R2	2.2 1/4
R301	ERDS2TJ472	4.7K 1/4
R302	ERDS2TJ472	4.7K 1/4
R303	ERDS2TJ472	4.7K 1/4
R304	ERX1ANJ100	10 1
R305	ERDS2TJ102	1K 1/4
R306	ERDS2TJ102	1K 1/4
R309	ERDS2TJ103	10K 1/4
R310	ERDS2TJ103	10K 1/4
R311	ERDS2TJ103	10K 1/4
R312	ERDS2TJ103	10K 1/4
R313	ERDS2TJ471	470 1/4
R351	ERDS2TJ154	150K 1/4
R352	ERDS2TJ333	33K 1/4
R353	ERDS2TJ333	33K 1/4
R354	ERDS2TJ123	12K 1/4
R355	ERDS2TJ103	10K 1/4
R356	ERDS2TJ154	150K 1/4
R357	ERDS2TJ103	10K 1/4
R358	ERDS2TJ8R2	8.2 1/4
R359	ERDS2TJ101	100 1/4
R401	ERDS2TJ472	4.7K 1/4
R402	ERDS2TJ472	4.7K 1/4
R403	ERDS2TJ103	10K 1/4
R404	ERDS2TJ103	10K 1/4
R405	ERDS2TJ103	10K 1/4
R406	ERDS2TJ103	10K 1/4
R407	ERDS2TJ472	4.7K 1/4
R408	ERDS2TJ472	4.7K 1/4
R409	ERDS2TJ472	4.7K 1/4
R410	ERDS2TJ472	4.7K 1/4
R411	ERDS2TJ472	4.7K 1/4
R412	ERDS2TJ472	4.7K 1/4
R413	ERDS2TJ394	390K 1/4
R414	ERDS2TJ152	1.5K 1/4
R415	ERDS2TJ472	4.7K 1/4
R416	ERDS2TJ473	47K 1/4
R417	ERDS2TJ222	2.2K 1/4
R418	ERDS2TJ222	2.2K 1/4
R419	ERDS2TJ222	2.2K 1/4
R420	ERDS2TJ222	2.2K 1/4
R421	ERDS2TJ223	22K 1/4
R422	ERDS2TJ223	22K 1/4
R423	ERDS2TJ223	22K 1/4
R425	ERDS2TJ123	12K 1/4
R426	ERDS2TJ123	12K 1/4
R427	ERDS2TJ123	12K 1/4
R428	ERDS2TJ103	10K 1/4
R431	ERDS2TJ102	1K 1/4
R432	ERDS2TJ103	10K 1/4
R433	ERX1ANJ2R7H	2.7 1
R434	ERDS2TJ103	10K 1/4
R435	ERDS2TJ103	10K 1/4
R436	ERDS2TJ103	10K 1/4
R437	ERDS2TJ103	10K 1/4
R438	ERDS2TJ103	10K 1/4
R439	ERDS2TJ103	10K 1/4
R440	ERDS2TJ103	10K 1/4
R441	ERDS2TJ103	10K 1/4
R443	ERDS2TJ471	470 1/4
R444	ERDS2TJ471	470 1/4
R471	ERDS2TJ473	47K 1/4
R472	ERDS2TJ331	330 1/4
R473	ERDS2TJ103	10K 1/4
R474	ERDS2TJ103	10K 1/4
R801	ERDS2TJ273	27K 1/4
R802	ERDS2TJ273	27K 1/4
R803	ERDS2TJ273	27K 1/4
R804	ERDS2TJ273	27K 1/4
R805	ERDS2TJ473	47K 1/4
R806	ERDS2TJ473	47K 1/4
R807	ERDS2TJ473	47K 1/4
R808	ERDS2TJ473	47K 1/4
R809	ERDS2TJ472	4.7K 1/4
R810	ERDS2TJ472	4.7K 1/4
R811	ERDS2TJ103	10K 1/4
R812	ERDS2TJ103	10K 1/4
R813	ERDS2TJ821	820 1/4
R814	ERDS2TJ821	820 1/4
R815	ERDS2TJ101	100 1/4
R816	ERDS2TJ101	100 1/4
R817	ERDS2TJ473	47K 1/4
R818	ERDS2TJ473	47K 1/4
R819	ERDS2TJ471	470 1/4
R820	ERDS2TJ471	470 1/4
R821	ERDS2TJ104	100K 1/4
R822	ERDS2TJ104	100K 1/4
R823	ERDS2TJ473	47K 1/4
R824	ERDS2TJ104	100K 1/4
R825	ERDS2TJ561	560 1/4
R826	ERDS2TJ471	470 1/4
R827	ERDS2TJ102	1K 1/4
R828	ERDS2TJ102	1K 1/4
R851	ERDS2TJ103	10K 1/4
R852	ERDS2TJ103	10K 1/4
R853	ERDS2TJ153	15K 1/4
R854	ERDS2TJ153	15K 1/4
R855	ERDS2TJ473	47K 1/4
R856	ERDS2TJ473	47K 1/4
R857	ERDS2TJ470	47 1/4
R858	ERDS2TJ470	47 1/4
R859	ERDS2TJ222	2.2K 1/4
R860	ERDS2TJ222	2.2K 1/4
CAPACITORS(VALUE,VOLTAGE)		
C1 ⚠	ECKDKC103PF2	0.01 125
C1A ⚠	ECKD1H223PF	0.022 50
C2 ⚠	ECKD1H223PF	0.022 50
C3 ⚠	ECKD1H223PF	0.022 50
C4	ECEA1CU332	3300 16

Ref. No.	Part No.	Value.
C5	ECEA1CU332	3300 16
C6	ECEA0JS331	330 6.3
C7	ECEA1AU221	220 10
C8	ECEA1AU221	220 10
C9	ECEA1JU470	47 63
C10	ECEA1HU010	1 50
C11	ECEA1HU010	1 50
C12	ECEA1HU010	1 50
C301	ECEA0JU101	100 6.3
C302	ECFD1H104ZF	0.1 50
C303	ECFD1H104ZF	0.1 50
C304	ECQM1H154JZ	0.15 50
C305	ECEA0JU101	100 6.3
C306	ECCD1H050CC	5P 50
C307	ECCD1H050CC	5P 50
C308	ECFD1H104ZF	0.1 50
C309	ECEA0JS331	330 6.3
C310	ECEA0JS331	330 6.3
C311	ECQM1H104KF	0.1 50
C312	ECQM1H104KF	0.1 50
C313	ECBT1H680J5	68P 50
C314	ECBT1H680J5	68P 50
C315	ECBT1H680J5	68P 50
C316	ECBT1H680J5	68P 50
C317	ECFD1H104ZF	0.1 50
C319	ECEA0JS331	330 6.3
C320	ECEA0JS331	330 6.3
C321	ECBT1E223ZF	0.022 25
C322	ECBT1E223ZF	0.022 25
C351	ECKR1H222KB	0.0022 50
C352	ECKD1H103PF	0.01 50
C355	ECFF1E563MR	0.056 25
C401	ECQM1H154JZ	0.15 50
C402	ECEA0JU470	47 6.3
C403	ECFD1H104ZF	0.1 50
C404	ECCD1H220K	22P 50
C405	ECKD1H103PF	0.01 50
C406	ECEA1HS0R1	0.1 50
C407	ECEA1EU470	47 25
C408	ECFR1E683MR2	0.068 25
C409	ECFR1E683MR2	0.068 25
C805	ECCD1H470K	47P 50
C806	ECCD1H470K	47P 50
C807	ECCD1H470K	47P 50
C808	ECCD1H470K	47P 50
C809	UES1C100M1	10 16
C810	UES1C100M1	10 16
C811	ECQM1H102JZ	0.001 50
C812	ECQM1H102JZ	0.001 50
C813	UES1C100M1	10 16
C814	UES1C100M1	10 16
C815	ECEA1HN2R2S	2.2 50
C816	ECEA0JS102	1000 6.3
C817	ECEA0JS331	330 6.3
C818	ECEA0JS331	330 6.3
C819	ECFD1H104ZF	0.1 50
C820	ECFD1H104ZF	0.1 50
C851	ECKD1H223PF	0.022 50
C852	ECKD1H223PF	0.022 50
C853	UES1C100M1	10 16
C854	UES1C100M1	10 16
C855	ECKR1H103ZF5	0.01 50
C856	ECKR1H103ZF5	0.01 50
C857	ECFD1H104ZF	0.1 50
C1001	ECFD1H104ZF	0.1 50
SERVO		
RESISTORS(VALUE,WATTAGE)		
R101	ERDS2TJ471	470 1/4
R102	ERJ6GEYJ120V	12 1/10
R103	ERJ6GEYJ122	1.2K 1/10
R104	ERJ6GEYJ471V	470 1/10
R105	RRJ6GCJ102TE	1K 1/6
R106	RRJ6GCJ102TE	1K 1/6
R108	ERJ6GEYJ224V	220K 1/10
R110	ERDS2TJ222	2.2K 1/4
R111	ERJ6GEYJ154V	150K 1/10
R113	ERJ6GEYJ472V	4.7K 1/10
R114	ERJ6GEYJ683V	68K 1/10
R116	ERJ6GEYJ332V	3.3K 1/10
R117	ERJ6GEYJ123	12K 1/10
R118	ERJ6GEYJ333V	33K 1/10
R119	RRJ6GCJ223TE	22K 1/6
R122	ERDS2TJ104	100K 1/4
R123	ERJ6GEYJ470V	47 1/10
R124	RRJ6GCJ103TE	10K 1/6
R125	RRJ6GCJ222TE	2.2K 1/6
R127	ERDS2TJ681	680 1/4
R128	RRJ6GCJ103TE	10K 1/6
CAPACITORS(VALUE,VOLTAGE)		
C101	ECEA1CKS220I	22 16
C102	ECEA1HKS010I	1 50
C103	ECEA1CKS220I	22 16
C106	RCUV1E104ZF	0.1 25
C107	ECEA0GKS101I	100
C108	ECEA0JKS470I	47 6.3
C109	ECEA1HKS010I	1 50
C110	RCUV1H681KB	680P 50
C111	ECUV1C224KR	0.22 16
C112	RCUV1H331KB	330P 50
C113	ECEA1HSN010I	1 50
C114	RCUV1E333KB	0.033 25
C115	ECEA1HSN010I	1 50
C116	RCUV1E333KB	0.033 25
C117	ECBT1H102KB5	0.001 50
C119	ECEA1CKN4R7I	4.7 16
C120	ECEA1CKN4R7I	4.7 16
C122	ECEA0JKS220I	22 6.3
C123	RCUV1E104ZF	0.1 25
C124	ECUV1E823KB	0.082 25
C125	ECUV1C224KR	0.22 16
C127	ECEA0JKF101I	100 6.3
C128	ECEA1CKA101I	100 16
C132	ECUV1E104KB	0.1 25
C133	RCUV1H330KC	33P 50
C134	ECUV1C224KR	0.22 16
C135	ECUV1C224KR	0.22 16
C136	ECEA0GKS101I	100
C138	RCUV1E104ZF	0.1 25
C139	RCUV1H470KC	47P 50
C140	RCUV1E103KB	0.01 25
C141	RCUV1H470KC	47P 50
C142	RCUV1H470KC	47P 50
C143	RCUV1H470KC	47P 50
C144	RCUV1H470KC	47P 50
C145	ECEA0JKF101I	100 6.3
C146	RCUV1H181KC	180P 50
C147	RCUV1H472KB	0.0047 50
C148	ECEA1ESN4R7I	4.7 25
C149	RCUV1E104ZF	0.1 25
C150	RCUV1E103KB	0.01 25

■ REPLACEME

Notes : * Important safety nc
Components identi
manufacturer's spe
* Bracketed indicatio
Parts without these

Ref. No.	Part No.
INTEGRATED CIRCUITS	
IC1	M5230L
IC2	LM2940T5
IC301	MN6617S
IC302	MN6623
IC303	SVICXK5816M
IC351	SVIBA4558F
IC401	MN15283PJB
IC402	SVIM51953BL
IC403	MN1550PEB
IC404	BA6247
IC601	HC-MD12M
IC803	LM833M
IC804	SVIBA4560F
IC805	SVIH8DN2175
IC806	SVIH8DN2175
IC807	SVIBA4558F
IC851	M5218L
TRANSISTORS	
Q1	2SB1238QS
Q2	2SA1309QRS
Q3	2SC3311A-Q
Q301	UN4212
Q351	UN4112
Q352	2SD1862-P
Q353	2SB1240-P
Q401	UN4212
Q402	UN4212
Q403	UN4212
Q404	UN4212
Q405	UN4212
Q406	UN4212
Q407	UN4112
Q408	UN4112
Q409	UN4112
Q410	UN4112
Q411	2SA1309QRS
Q412	2SA1309QRS
Q413	2SA1309QRS
Q414	2SA1309QRS
Q415	UN4212
Q416	2SA1309QRS
Q419	2SD1862-P
Q420	UN4212
Q451	2SD636
Q801	2SC3311A-Q
Q802	2SC3311A-Q
Q803	2SD1330R
Q804	2SD1330R
Q805	UN4112
Q806	UN4212
Q807	UN4112
Q808	UN4212
Q809	UN4112
Q811	2SC3311A-Q
Q812	2SA1309QRS
Q851	2SD1330R
Q852	2SD1330R
DIODES	
D1 ⚠	SVD1SR35200A
D2 ⚠	SVD1SR35200A
D3 ⚠	SVD1SR35200A
D4 ⚠	SVD1SR35200A
D7 ⚠	SVD1SR35200A
D8	MA4300M
D9	MA4068M
D10 ⚠	SVD1SR35200A
D11 ⚠	SVD1SR35200A
D12 ⚠	SVD1SR35200A
D401	MA165

Value.
2K 1/6
30 1/4
0K 1/6
2 16
50
2 16
1 25
00
7 6.3
50
30P 50
22 16
30P 50
50
033 25
50
033 25
001 50
7 16
7 16
2 6.3
1 25
082 25
22 16
0 6.3
0 16
1 25
0P 50
22 16
22 16
0
1 25
0P 50
01 25
0P 50
0P 50
0P 50
0P 50
0 6.3
0P 50
0047 50
7 25
1 25
01 25

■ REPLACEMENT PARTS LIST

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	M5230L	I.C. REGULATOR
IC2	LM2940T5	I.C. REGULATOR
IC301	MN6617S	I.C. SIGNAL PROCESSING
IC302	MN6623	I.C. D/A CONVERTER
IC303	SVICXK5816M	I.C. 16K RAM
IC351	SVIBA4558F	I.C. OPERATION AMP.
IC401	MN15283PJB	I.C. SYSTEM CONTROL
IC402	SVIM51953BL	I.C. RESET
IC403	MN1550PEB	I.C. REMOTE SIGNAL
IC404	BA6247	I.C. MOTOR DRIVE
IC601	HC-MD12M	I.C. REMOTE SENSOR
IC803	LM833M	I.C. OPERATION AMP.
IC804	SVIBA4560F	I.C. OPERATION AMP.
IC805	SVIH8DN2175	I.C. LPF
IC806	SVIH8DN2175	I.C. LPF
IC807	SVIBA4558F	I.C. OPERATION AMP.
IC851	M5218L	I.C. HEADPHONES AMP.
TRANSISTORS		
Q1	2SB1238QS	TRANSISTOR
Q2	2SA1309QRS	TRANSISTOR
Q3	2SC3311A-Q	TRANSISTOR
Q301	UN4212	TRANSISTOR
Q351	UN4112	TRANSISTOR
Q352	2SD1862-P	TRANSISTOR
Q353	2SB1240-P	TRANSISTOR
Q401	UN4212	TRANSISTOR
Q402	UN4212	TRANSISTOR
Q403	UN4212	TRANSISTOR
Q404	UN4212	TRANSISTOR
Q405	UN4212	TRANSISTOR
Q406	UN4212	TRANSISTOR
Q407	UN4112	TRANSISTOR
Q408	UN4112	TRANSISTOR
Q409	UN4112	TRANSISTOR
Q410	UN4112	TRANSISTOR
Q411	2SA1309QRS	TRANSISTOR
Q412	2SA1309QRS	TRANSISTOR
Q413	2SA1309QRS	TRANSISTOR
Q414	2SA1309QRS	TRANSISTOR
Q415	UN4212	TRANSISTOR
Q416	2SA1309QRS	TRANSISTOR
Q419	2SD1862-P	TRANSISTOR
Q420	UN4212	TRANSISTOR
Q451	2SD636	TRANSISTOR
Q801	2SC3311A-Q	TRANSISTOR
Q802	2SC3311A-Q	TRANSISTOR
Q803	2SD1330R	TRANSISTOR
Q804	2SD1330R	TRANSISTOR
Q805	UN4112	TRANSISTOR
Q806	UN4212	TRANSISTOR
Q807	UN4112	TRANSISTOR
Q808	UN4212	TRANSISTOR
Q809	UN4112	TRANSISTOR
Q811	2SC3311A-Q	TRANSISTOR
Q812	2SA1309QRS	TRANSISTOR
Q851	2SD1330R	TRANSISTOR
Q852	2SD1330R	TRANSISTOR
DIODES		
D1 ⚠	SVD1SR35200A	DIODE
D2 ⚠	SVD1SR35200A	DIODE
D3 ⚠	SVD1SR35200A	DIODE
D4 ⚠	SVD1SR35200A	DIODE
D7 ⚠	SVD1SR35200A	DIODE
D8	MA4300M	DIODE
D9	MA4068M	DIODE
D10 ⚠	SVD1SR35200A	DIODE
D11 ⚠	SVD1SR35200A	DIODE
D12 ⚠	SVD1SR35200A	DIODE
D401	MA165	DIODE
D402	MA165	DIODE
D403	MA165	DIODE
D404	MA165	DIODE
D405	MA165	DIODE
D406	MA165	DIODE
D407	MA165	DIODE
D408	MA165	DIODE
D409	MA165	DIODE
D410	MA165	DIODE
D411	MA165	DIODE
D412	MA165	DIODE
D413	MA165	DIODE
D414	MA165	DIODE
D415	MA165	DIODE
D416	MA165	DIODE
D417	MA165	DIODE
D418	MA4030M	DIODE
D420	MA4220	DIODE
D421	MA165	DIODE
D422	MA4056-M	DIODE
D451	SVDGP1S53	L.E.D
D801	MA165	DIODE
D802	MA165	DIODE
D803	MA165	DIODE
D805	MA165	DIODE
D806	MA165	DIODE
I.C.PROTECTORS		
ICP11 ⚠	SRUN15	I.C. PROTECTOR
VARIABLE RESISTORS		
VR851	EVJWEA020A15	V.R., HEADPHONES LEVEL
COILS AND TRANSFORMERS		
L302	ELEPK4R7KA	COIL
L401	ELEPK3R3KA	COIL
L801	ELEPK3R3KA	COIL
L802	ELEPK3R3KA	COIL
L803	ELEPK1R0KA	COIL
L804	ELEPK1R0KA	COIL
L851	ELEPK3R3KA	COIL
L852	ELEPK3R3KA	COIL
L853	ELEPK3R3KA	COIL
T1 (M) ⚠	RLTKKK075KM	POWER TRANSFORMER
T1 (MC) ⚠	SLTD5K080KC	POWER TRANSFORMER
OSCILLATORS		
X301	SVQ49U338S	OSCILLATOR
DISPLAYS		
FL601	SAD8MT40GK	DISPLAY
SWITCHES		
S1 ⚠	ESB8249V	SW, POWER
S451	SSPD12	SW, EJECT DET.
S452	SSPD12	SW, LOADING DET.
S453	SSPD12	SW, DRAW-IN DET.
S454	SSPD13-1	SW, RESET DET.
S462	SSPD12	SW, MAGAZINE DET.
S601	EVQQS405K	SW, DISC(NO.1)
S602	EVQQS405K	SW, DISC(NO.2)
S603	EVQQS405K	SW, DISC(NO.3)
S604	EVQQS405K	SW, DISC(NO.4)
S605	EVQQS405K	SW, DISC(NO.5)
S606	EVQQS405K	SW, DISC(NO.6)
S607	EVQQS405K	SW, B.SKIP
S608	EVQQS405K	SW, F.SKIP
S609	EVQQS405K	SW, B.SEARCH
S610	EVQQS405K	SW, F.SEARCH
S611	EVQQS405K	SW, PROGRAM
S612	EVQQS405K	SW, CLEAR
S613	EVQQS405K	SW, PAUSE
S614	EVQQS405K	SW, PLAY
S615	EVQQS405K	SW, RANDOM
S616	EVQQS405K	SW, STOP
S617	EVQQS405K	SW, EJECT
S618	EVQQS405K	SW, TIME MODE
S619	EVQQS405K	SW, REPEAT
SERVO		
INTEGRATED CIRCUITS		
IC101	AN8373S	I.C. SERVO AMP
IC102	AN8374S	I.C. SERVO PROCESSOR
IC103	AN8377	I.C. B.T.L DRIVE
IC104	LM2940T5M	I.C. RESET
TRANSISTORS		
Q101	2SA1547QSTV2	TRANSISTOR
VARIABLE RESISTORS		
VR101	EVND3AA00B14	V.R. BEST EYE ADJ.
VR102	EVND3AA00B14	V.R. TRACKING GAIN ADJ.
VR103	EVND3AA00B14	V.R. TRACKING OFFSET ADJ.
VR104	EVND3AA00B14	V.R. FOCUS GAIN ADJ.
VR105	EVND3AA00B14	V.R. FOCUS OFFSET ADJ.
VR106	EVND3AA00B24	V.R. TRACKING BALANCE ADJ.
MAGNET RESISTOR ELEMENTS		
RA1	EWS7M0A00Q53	RESISTANCE UNIT

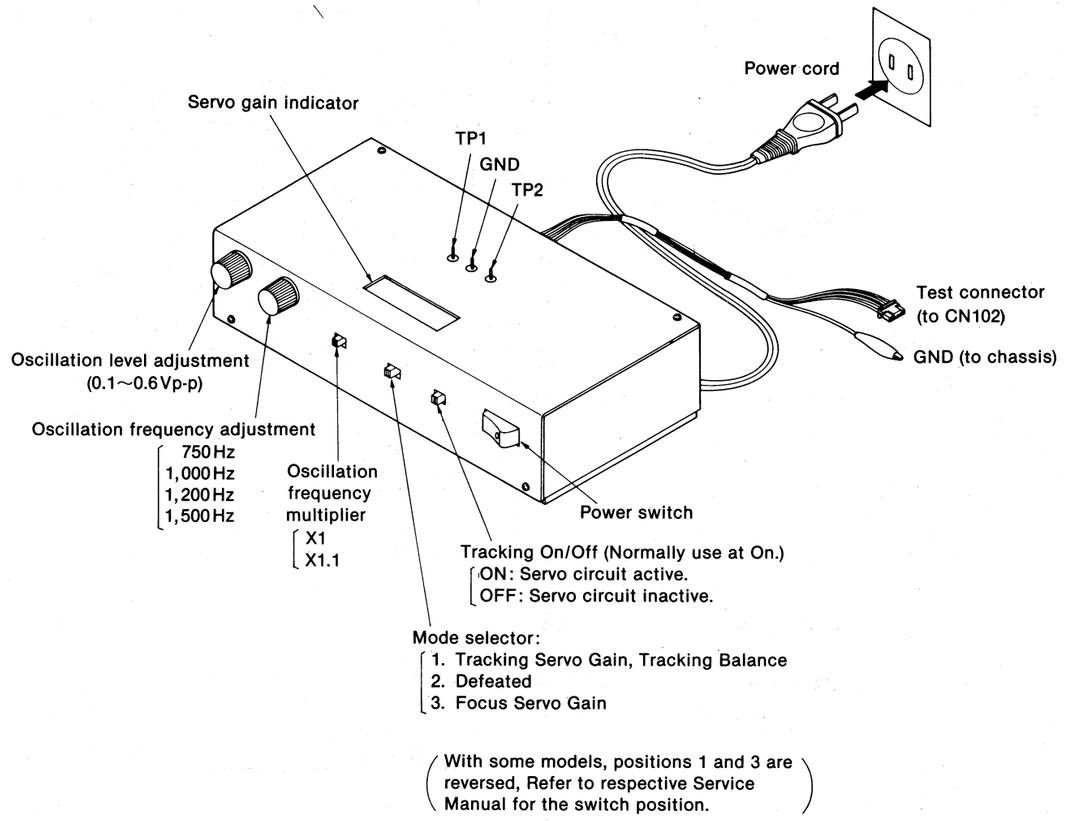
■ NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)

The following introduces the improved version of the current servo gain adjuster (SZZP1017F):

Part number: SZZP1094C

Features:

(1) Contains all oscillation frequencies and output adjustments needed for focus servo gain, tracking servo gain, and tracking balance adjustment (requires no external oscillator).
(2) Panel indicators indicate the best points of focus and tracking servo gains (no oscilloscope needed).
(3) Internal power supply eliminates the need for power supply from the CD player.



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